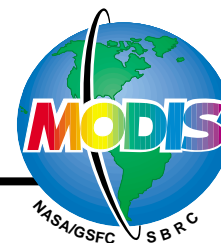




MODIS Science Team Meeting

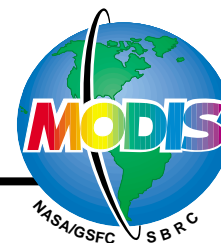


MODIS L2-L4 PGEs and MODAPS: Readiness for Production

Presenter: Edward Masuoka
Science Data Support Team Leader
(301) 614-5515
emasuoka@pop900.gsfc.nasa.gov



Product Integration and Test Status



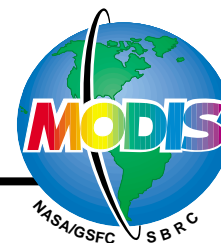
Level 2 Products

Data Product	S/W Version running in MODAPS	S/W Version Needed for Launch	Delivery Date for Launch Version	SSI&T Completed
Aerosols	2.3.1	2.3.1	9/9/99	10/1/99
Interim Daily Atmos.	2.3.1	2.3.1	7/13/99	7/27/99
Cloud Properties	2.5.1	2.5.1	10/14/99	10/25/99
Snow	2.3.0	2.3.0	9/2/99	9/30/99
Sea Ice	2.2.10	2.2.10	10/13/99	10/22/99
Ocean Color	2.2.9	2.2.9	7/1/99	8/26/99
Sea Surface Temp.	2.2.9	2.2.9	8/3/99	8/26/99
Land Surf. Reflect.	2.2.23	2.2.23	10/26/99	10/28/99
Level 2g products	2.2.2	2.2.2	10/19/99	11/8/99
Land Surface Temp.	2.1.23	2.1.26	12/1/99	12/17/99

Bold = done , Plain = launch version not in production system



Product Integration and Test Status



Level 3 Ocean and Atmosphere Products

Data Product	S/W Version at MODAPS	S/W Version Needed for Launch	Delivery Date for Launch Version	SSI&T Completed
Ocean Interim Day	2.2.10	2.2.10	8/24/99	9/1/99
Ocean 3 Wk Reference	2.2.11 & 2.2.15	2.2.11 & 2.2.15	9/15/99	10/22/99
Oceans Daily Maps	2.2.17	2.2.17	11/1/99	11/3/99
Oceans Weekly Maps	2.2.9	2.2.9	11/3/99	11/15/99
Atmosphere Daily	2.4.0	2.4.0	9/13/99	10/22/99
Atmosphere Weekly	2.4.0	2.4.0	9/13/99	11/19/99
Atmosphere Monthly	2.3.6	2.3.6	8/20/99	11/3/99

Bold = done , Plain = launch version not in production system



Product Integration and Test Status



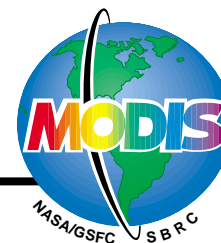
Level 3 Land Products

Data Product	S/W Version at MODAPS	S/W Version Needed for Launch	Delivery Date for Launch Version	SSI&T Completed
Aggregation	2.1.1	2.2.13	11/15/99	11/29/99
LAI/FPAR daily	2.1.8	2.1.8	10/12/99	11/19/99
Snow daily	2.2.0	2.2.0	10/26/99	11/19/99
Sea Ice daily*	2.1.1	2.1.1	10/28/99	12/15/99
Surface Reflect weekly	2.2.13	2.2.13	10/13/99	10/26/99
Fire Weekly	2.1.11	2.1.12	11/19/99	12/3/99
Land Surface Temp. Weekly	2.0.6	2.0.6	9/8/99	9/8/99
LAI/FPAR Weekly	2.0.5	2.0.5	9/30/99	10/21/99
Snow Weekly	2.1.5	2.1.5	8/25/99	10/25/99
BRDF/Albedo, 16 day	2.1.5	2.1.5		
Vegetation Indices, 16 day	2.0.6	2.0.6	7/19/99	9/15/99

Bold = done , Plain = launch version not in production system



Product Availability



- MODIS product release schedule
 - L+30 to L+120
 - Shake out Level 1 products, Release (L+ 90 to L+120)
 - Testing of Level 2 and higher
 - L+60 to L+180:
 - Test and release L2 products based on heritage algorithms
 - Atmospheric Profiles, Release (L+120-L+150)
 - Cloud Product, Release (L+120-L+180)
 - Total Precip. H2O, Gridded Atmos, Release (L+150-L+180)
 - Testing and production of Level 2 and Level 3



Product Availability (continued)



- L+90 to L+210
 - Release most products (L+150-L+210)
 - All at-launch products running in MODAPS, inserting in DAAC archives with updated valids
 - Integration of post-launch PGEs begins
- L+150 to L+360
 - LAI, Evapotranspiration, NPP, Release (L+210 to L+360)
 - All at-launch products released and in full production
 - Integration of post-launch products completed
 - Testing of new “at-launch” PM PGEs
- Product information and schedule for public release at:
 - http://grid2.gsfc.nasa.gov/~todirita/terra/terra_dataproduct.html



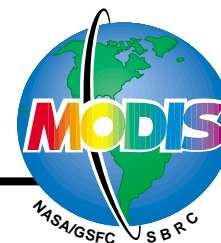
Production Goals and Requirements



- MODAPS **will** ingest 217GB/day of Level 1 from GDAAC
- MODAPS **will** ship at least 114GB of L2-L3 to DAACs
- MODAPS **will** ship at least 10% of the 1x product volume (29GB/day) to SCFs for Q/A
- Science Team has a **goal** of 527GB/day shipped to DAACs
- ECS capable of ingesting 527GB/day - M. Moore
- MODAPS will exceed baseline requirements to insure that user community has all products in sufficient volume to assess the utility of products
 - User preference and degree of product compression in DAAC archives will determine volume of each product, which will be stored in DAAC permanent archive



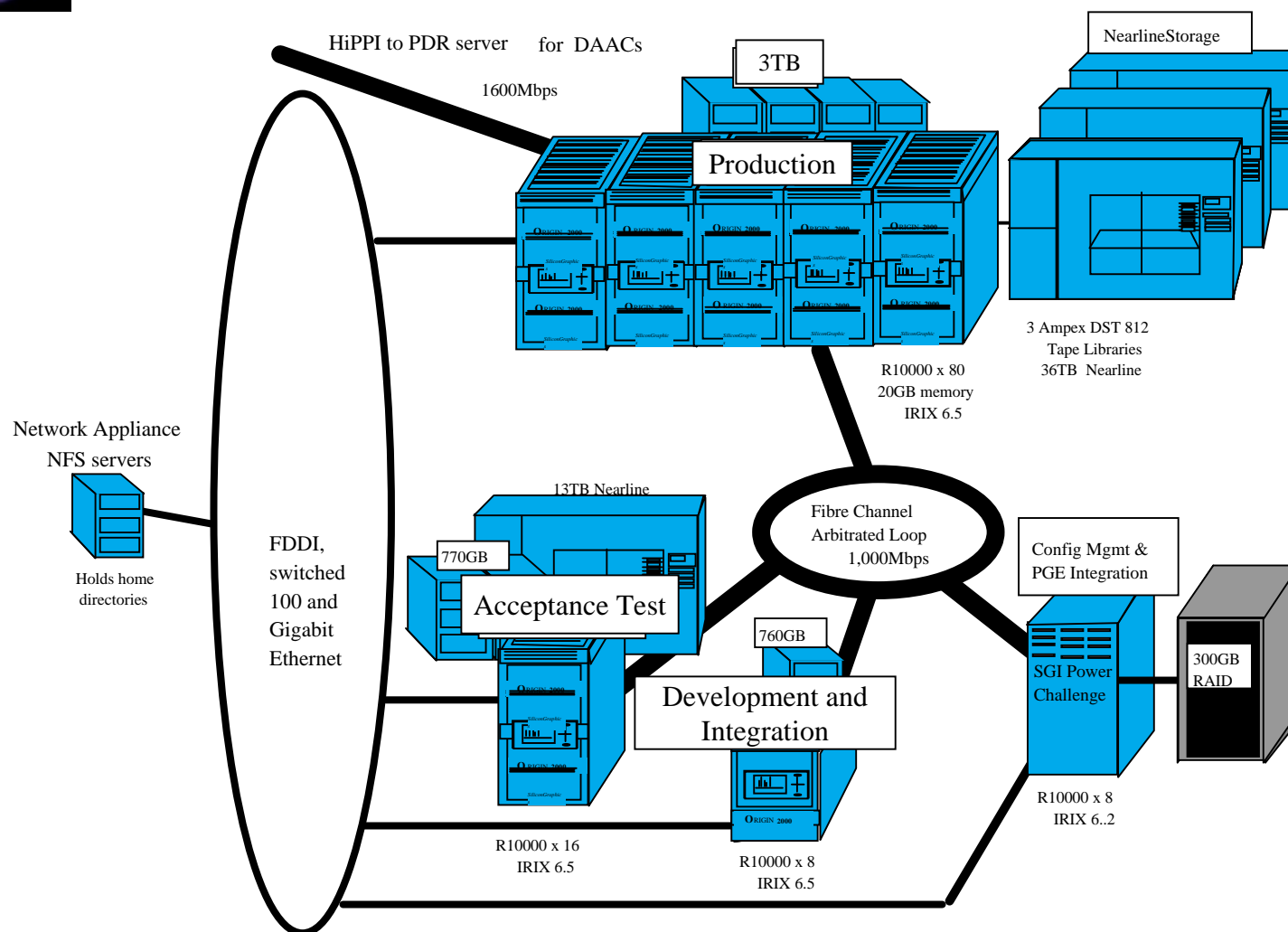
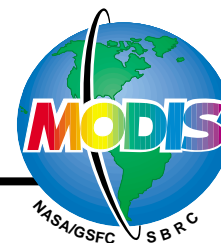
Hardware and Software Status



- Hardware Status
 - SGI Origin 2000 production system
 - 80 R10K processors installed and tested
 - 3TB disk installed and tested
 - Spares on hand for RAID and non-RAID disks
 - Ampex tape libraries installed and tested
 - All internal networks installed and tested
 - Maintenance agreements in place
 - 9am to 5pm Monday-Friday



Hardware Architecture





MODAPS Performance



- Most PGEs run faster than 2/96 baseline in our tests
 - Level 2 and daily Level 3 production better than 1x
 - Level 3 Land 8-day production rate is better than 1x
- Ampex tape libraries are fast and tape drive reliability has improved but:
 - Operator intervention is required to fix problems between Legato Networker and Ampex libraries
 - File retrieves from Ampex libraries are the bottleneck in making 8-day/16-day Land products



MODAPS Performance (continued)



- Disk I/O is slow due to single 3TB file system in V1
 - Overall production is still better than .5x
 - Software change to improve I/O performance has been developed but is not integrated into the production system, due January 2000



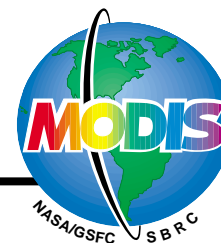
Production Plan



- Every day
 - Level 2
 - Level 2g
 - Level 3 Daily
 - Ocean Interim Products (PGE20)
 - Ocean Daily Products
- On certain days of the week
 - Land 8 days (354 tiles / week, in 5 of 8 days)
 - Land 16 days (354 tiles/16 days, in 12 of 16 days)



Nominal Production Plan



- Day 8
 - Ocean Weekly Products
 - Atmosphere Weekly Product
 - Land 32 days (every 4th 8 day period)
- Also monthly products run on calendar month



Operations Staff



- MODIS Production Staff
 - 1-2 production analysts each shift 7x 24, (8 total)
 - UNIX system administrators (SA's)
 - 1 SA's on prime shift (8am-6pm M-F)
 - 2 SA's on-call outside prime shift 7x24
 - 1 system engineer (9am-5:30pm, M-F and on call)
 - 1 facility manager (8am-7pm, M-F and on call)
 - 4 developers (9am-5:30pm, M-F, and on call)



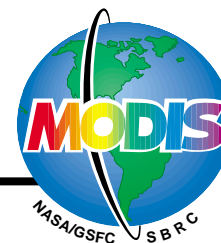
Remaining V1 Work (through L+90)



- Combined Performance Test with GDAAC (J-day)
- Run all at-launch PGEs in 16-days of production
- Get all at-launch products to insert cleanly in DAACs
- Receive and I&T 500m PGEs from Land
 - Replacing 250m products will significantly lower processing load
- Upgrade IRIX to improve Gigabit Ethernet throughput
- Upgrade connection to EBNET via Gigabit Ethernet
- Finish operations space in Building 32



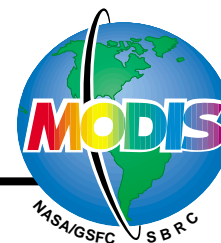
Summary



- MODAPS can meet production and distribution requirements through Launch + 1 year
 - Ship to DAACs 114GB/day of L2 and higher products (.5x of 2/96 baseline)
- MODAPS can make 1x of L2-L3 daily products
- 8-day, 16-day and monthly PGEs have been run in MODAPS but not in a test that simulates nominal production (production in tandem with GDAAC and running with daily load of L2-L3 Daily PGEs)



Summary (continued)



- To reach goal of 527GB/day will require the multiple file system fix, additional online RAID, solid production by GDAAC and 500m Land PGEs
- If we can't make the goal of 527GB/day with additional hardware after our 6 month shake-out period. We can choose to:
 - Skip days
 - Drop selected products
 - Change spatial sampling in Ocean PGEs
 - Process a subset of land tiles

PGE	Lvl	Priority	PROCESS	Loader	DAAC	Launch Version	Version in ops	Latest delivery status	Under CM V1 MODAPS	Passed Testing	Running in GDAAC or MODAPS	Inserts into archive	Valid match	Comments	Work Around or Inserts
PGE01	1	1	MOD_PR01	MD0	GSFC	2.1.3	2.1.3	8/30/99	9/1/99	8/31/99					
PGE01	1	1	MOD_PR03	MD0	GSFC			2/19/99	4/23/99	5/21/99					
PGE02	1	2	MOD_PR02	MD1	GSFC	2.2.0	2.2.0	6/3/99	6/3/99						
PGE03	2	3	MOD_PR07	MD1	GSFC	2.4.3	2.1	8/20/99	8/20/99	11/12/99	11/15/99			2.4.3 in SSI&T at GSFC DAAC, NCRs with ECS	
PGE03	2	3	MOD_PR35	MD1	GSFC			8/20/99	8/20/99	11/12/99	11/15/99				
PGE03	2	3	MOD_PRVOLC	MD1	GSFC			12/23/97	5/28/99	11/12/99	11/15/99				
PGE71	1	4	MOD_PR71	MD0	GSFC	2.02, 2.1.2	none	11/1/99	11/12/99	11/12/99	11/15/99			2.1.2 delivered 11/1 from developer	
PGE04	2	4	MOD_PR04	MDA1	GSFC	2.4.0	2.3.1		11/11/99			11/15			
PGE04	2	4	MOD_PR05	MDA1	GSFC				11/11/99			11/15			
PGE05	2	5	MOD_PR04L	MDL3	GSFC	2.3.2	2.3.2			10/15/99	10/22/99	11/15		ECS System can't archive this product until 5B fix	
PGE06	2	14	MOD_PR06C	MDA1	GSFC	2.5.1	2.5.1		10/15/99	10/25/99		11/15			
PGE06	2	6	MOD_PR06CD	MDA1	GSFC				10/15/99	10/25/99		11/15			
PGE06	2	6	MOD_PR06CT	MDA1	GSFC				10/15/99	10/25/99		11/15			
PGE06	2	6	MOD_PR06OD	MDA1	GSFC				10/15/99	10/25/99		11/15			
PGE07	2	16	MOD_PR10	MDL1	NSIDC	2.3.0	2.3.0	8/30/99	9/2/99	9/28/99					
PGE08	2	29	MOD_PR29	MDL1	NSIDC	2.2.10	2.2.10	8/18/99	8/31/99	10/20/99	10/22/99	8/30			
PGE09	2	9	MOD_PR18_L2	MDO1	GSFC	2.2.9	2.2.9	08/03/99	08/03/99						
PGE10	2	16	MOD_PR28_L2	MDO1	GSFC	2.2.9	2.2.9	08/03/99	08/03/99			9/30			
PGE11	2	6	MOD_PR09	MDL3	EDC	2.2.25	2.2.22	10/14/99	11/11/99			10/8		Fix for coarse resolution surface reflectance	
PGE12	2g	10	MOD_PRMPNTR	MDL5	EDC	2.2.2	2.2.2		10/27/99	11/7/99		10/15			
PGE12	2g	10	MOD_PRMPGR	MDL5	EDC				10/27/99	11/7/99		10/15			
PGE13	2g	11	MOD_PRMPGR	MDL5	EDC	2.2.2	2.2.2		10/22/99	11/7/99		10/15			
PGE14	2g	13	MOD_PRMPGR	MDL5	EDC	2.2.2	2.2.2		10/22/99	11/7/99					
PGE15	2g	28	MOD_PRMPGR	MDL5	EDC	2.2.2	2.2.2		10/22/99	11/7/99					
PGE16	2	27	MOD_PR11A1	MDL4	EDC	2.1.25	2.1.23	8/13/99	11/1/99	11/9/99	11/3/99	10/15		11_L2 inserts, 11A1 and 11B1 fail to insert	
PGE17	2	7	MOD_PRNMC	PROSTAT	GSFC	2.1.2	2.1.2	8/16/99	8/16/99						
PGE19	2	8	MOD_PROZN	PROSTAT	GSFC	2.1.2	2.1.2	8/16/99	8/16/99						
PGE20	3	15	MOD_mtbin	MDO2	GSFC	2.2.10	2.2.10	8/30/99	9/1/99	9/1/99				Need to try insert of PGE 20 QC products	
PGE21	3		MOD_PR09A	MDL10	EDC	2.2.13	2.2.13		10/13/99	10/26/99		11/3			
PGE22	3	25	MOD_PRAGG	MDL5	EDC	2.1.1	2.1.1	Launch Ready PGE status 11/19/99						Fix to read orbit # due Monday from developer	
PGE23	3		MOD_PR43B	MDL12	EDC	2.1.5	2.1.0	8/11/99	8/27/99	9/9/99		11/15		Metadata problems caused by PGE22	

PGE	Lvl	Priority	PROCESS	Loader	DAAC	Launch Version	Version in ops	Latest delivery status	Under CM V1 MODAPS	Passed Testing	Running in GDAAC or MODAPS	Inserts into archive	Valid match	Comments	Work Around or Inserts
PGE25	3	12	MOD_PR13A1	MDL12	EDC	2.0.6	2.0.6	7/20/99	7/20/99	9/9/99	9/15/99	11/15			
PGE29	3	17	MOD_PR14A	MDL10	EDC	2.1.11	2.1.11	11/1/99		11/9/99	11/15/99	11/15		DDTS 1566	
PGE31	3		MOD_PR11A2	MDL10	EDC	2.0.6	2.0.6	8/16/99	8/17/99	9/8/99	11/15/99	10/23			
PGE33	3		MOD_PR15A1	MDL5	EDC	2.1.8	2.1.7	10/15/99		11/2/99				Reviewing results of test	
PGE34	3		MOD_PR15A2	MDL10	EDC	2.0.5	2.0.5	9/2/99	9/2/99	11/1/99	11/3/99	11/9			
PGE35	3	26	MOD_PR13A2	MDL12	EDC	2.0.5	2.0.5			11/9/99	11/15/99	11/15			
PGE36	4		MOD_PR17A1		EDC			10/23/98							
PGE37	4		MOD_PR17A2	MDL10	EDC			10/23/98							
PGE38	4		MOD_PR17Y		EDC			10/23/98							
PGE40	3		MOD_PR12M	MDL14	EDC	2.0.3	2.0.2	11/9/98	7/23/99						
PGE43	3		MOD_PR10A1	MDL5	NSIDC	2.2.0	2.1.4		10/27/99	11/2/99	11/15/99	8/30		Reviewing results of test	
PGE44	3		MOD_PR29A1	MDL5P	NSIDC	2.1.1	2.1.1	10/28/99	10/28/99					ESDT submitted to ECS on 11/2 by Mike Linda	
PGE45	3		MOD_PR10A2	MDL10	NSIDC	2.1.5	2.1.5			10/26/99					
PGE46	3		MOD_PR10C1	MDL9	NSIDC			4/23/99							
PGE49	3	18	MOD_mtbin	MDO3	GSFC	2.2.11	2.2.11	5/7/99	6/4/99	10/22/99	9/15/99				
PGE50	3	19	MOD_mfill	MDO3	GSFC	2.2.15	2.2.15	8/31/99	8/31/99	10/22/99	9/28/99	1/1			
PGE50	3	20	MOD_mtbin	MDO3	GSFC			5/7/99	6/4/99	9/22/99	9/22/99	1/1			
PGE51	3		MOD_PR27_Y	MDO5	GSFC	2.1.8	2.1.8	6/26/98	8/16/99						
PGE53	3	21	MOD_mcloud	MDO4	GSFC	2.2.17	2.2.17	10/25/99	10/25/99	11/2/99	11/3/99	1/1			
PGE54	3	22	MOD_mtbin	MDO4	GSFC	2.2.9	2.2.8	5/7/99	6/4/99		11/3/99	1/1			
PGE56	3	24	MOD_PR08D	MDA3	GSFC	2.4.0	2.4.0		10/13/99	10/22/99		11/1			
PGE56	3	24	MOD_PR08DC	MDA3	GSFC				10/13/99	10/22/99		11/1			
PGE57	3		MOD_PR08M	MDA5	GSFC	2.3.6	2.3.6	8/20/99	8/20/99	10/29/99	11/3/99	10/22			
PGE57	3		MOD_PR08MC	MDA5	GSFC			8/20/99	8/20/99	10/29/99	11/3/99	10/22			
PGE60	1	1	MOD_PR03CP	MDL1		2.1.0		8/19/99	11/9/99						
PGE66	3		MOD_PR44A		EDC			9/22/98							
PGE67	3		MOD_PR10C2		NSIDC										
PGE68	3		MOD_PR29C2		NSIDC										
PGE69	3	23	MOD_PR08T	MDA2	GSFC	2.4.0	2.4.0	Launch Ready PGE status 11/18/99			10/22/99				
PGE69	3	23	MOD_PR08TC	MDA2	GSFC					10/18/99	10/22/99				

PGE	Lvl	Priority	PROCESS	Loader	DAAC	Launch Version	Version in ops	Latest delivery status	Under CM V1 MODAPS	Passed Testing	Running in GDAAC or MODAPS	Inserts into archive	Valid match	Comments	Work Around or Inserts
PGE70	3		MOD_PR08W	MDA4	GSFC	2.4.0	2.4.0			11/9/99	11/15/99	11/1		10/29 ESDT Received	
			MAPI 2.3.2					4/13/99	4/23/99						
			SDST Toolkit 2.0					6/18/99	6/21/99	6/21/99	6/21/99				
			Oceans Libraries					4/9/99	4/29/99						
			Atmos.Lib 2.1					12/9/98	5/6/99						
			SIPS Ingest					4/15/99	5/10/99	5/12/99	5/12/99				
			SIPS Deliver					5/18/99	6/14/99	6/14/99	6/14/99				
			Key for PGE production status columns											Key for Comments column	
			Completed											ESDT Descriptor metadata errors in ECS system	
			Work in progress											PGE metadata changes needed to match baseline	
			Not finished											PGE metadata and ECS ESDT changes needed	
			Moved to Post-launch											New ESDTs needed	
														Key for Inserts into Archive column	
														Clean insert into archive	
														Mixed results, some ESDTs insert but not all	
														MODAPS mcf matches ECS baseline at DAAC	
														Will not be archived at the DAACs	
														Key for Clean Insert or Work Around column	
														Clean insert or Work Around with minor	
														Fatal, can not insert into archive	
														Will not be archived at the DAACs	
														Not tested yet	